1. (Previously Cancelled)

2. (Currently Amended) A semiconductor laser device as claimed in claim 34, wherein the ~~the~~ optical waveguide is a slab wide optical waveguide (WOW).

3. (Previously Amended) A semiconductor laser device as claimed in claim 34, wherein the semiconductor laser device is fabricated at least partly from compound semiconductor materials.

4. (Original) A semiconductor laser device as claimed in claim 3, wherein the compound semiconductor materials are III-V semiconductor based materials.

5. (Original) A semiconductor laser device as claimed in claim 4, wherein the III-V semiconductor based materials comprise Gallium Arsenide (GaAs) based materials.

6. (Original) A semiconductor laser device as claimed in claim 4, wherein the III-V semiconductor based materials include Aluminum Gallium Indium Phosphide (AlGaInP).

7. (Previously Amended) A semiconductor laser device as claimed in claim 34, wherein the semiconductor laser device comprises a multiple layer wafer structure.

8. (Original) A semiconductor laser device as claimed in claim 7, wherein the multiple layer wafer structure incorporates an optical waveguide comprising an undoped high refractive index core region containing at least one Quantum Well (QW) as-grown, and bounding the core region doped cladding regions having lower refractive indices than the core region.

9. (Original) A semiconductor laser device as claimed in claim 8, wherein the laser wafer structure contains at lease one Quantum Well layer structure as grown, and is grown on a (100) Si doped GaAs substrate misoriented 10° to the [111] A direction.

10. (Original) A semiconductor laser device as claimed in claim 8, wherein the Quantum Well layers comprise at least one double Quantum Well layer.

11. (Original) A semiconductor laser device as claimed in claim 10, wherein the Quantum Well layers have an emission wavelength as-grown of the order of 670ηm.

12. (Original) A semiconductor laser device as claimed in claim 7, wherein the multiple layer wafer structure consists of an Si doped GaAs buffer layer, an n-doped low refractive index waveguide cladding layer, an undoped high refractive index waveguide core layer, a p-doped cladding layer, a p-doped low refractive index barrier reduction layer, a p^{++} doped GaAs capping layer, a dielectric insulation layer and a p-type contact.

13. (Original) A semiconductor laser device as claimed in claim 7, wherein the multiple structure consists of a 500nm Si doped ($3x10^{18}cm^{-3}$) GaAs buffer layer, a 1.0 μm Si ($6x10^{17}cm^{-3}$) doped $(Al_{0.7}Ga_{0.3})_{0.5}In_{0.5}P$ lower waveguide cladding layer, a 600nm undoped $(Al_{0.3}Ga_{0.7})_{0.5}In_{0.5}P$ waveguide core layer, a 1.0μn Zn ($6x10^{17}cm^{-3}$) doped $(Al_{0.7}Ga_{0.3})_{0.5}In_{0.5}P$ cladding layer, a Zn ($2x10^{18}cm^{-3}$) doped $Ga_{0.5}In_{0.5}P$ barrier reduction layer and a 300nm Zn ($>1x10^{19}cm^{-3}$) doped GaAs capping layer.

14. (Previously Amended) A semiconductor laser device according to claim 8, wherein a number of low band-gap Quantum Wells are substantially centrally placed in the undoped core region.

15. (Original) A semiconductor laser device as claimed in claim 14, wherein the low band-gap Quantum Wells comprise two strained 6.8nm wide $Ga_{0.5}In_{0.5}P$ Quantum Wells and an undoped layer comprising a 15nm $(Al_{0.3}Ga_{0.7})_{0.5}In_{0.5}P$ barrier.

16. (Previously Amended) A semiconductor laser device as claimed in claim 34, which includes three separate portions:

first and second at least one portions which are Quantum Well Intermixed (QWI) and optically passive, and

the optically active region being a mid portion between the first and second at least one portions and including at least one Quantum Well.

17. (Previously Amended) A semiconductor laser device as claimed in claim 31, wherein said means for injecting carriers into the optically active region provides optical gain profiling in the device in use.

18. (Previously Amended) A semiconductor laser device as claimed in claim 17, wherein the carrier injection means is shaped as a geometric pattern, the shape of the carrier injection means being selected to allow for matching of the optical mode and gain of the device.

19. (Previously Amended) A semiconductor laser device as claimed in claim 40, wherein the contact is shaped in a half-tone, finger pattern, triangular or Gaussian distribution.

20. (Previously Amended) A semiconductor laser device as claimed in claim 16, wherein the first at least one optically passive portion acts, in use, as a Non-Absorbing Mirror (NAM) and the second at least one optically passive portion acts, in use, as a spatial filter.

21. (Previously Amended) A semiconductor laser device as claimed in claim 16, wherein the first and second at least one passive portions act, in use, as Non-Absorbing Mirrors (NAM).

22. – 30. (Previously Cancelled)

31. (Currently Amended) A semiconductor laser device comprising:

an optical waveguide;

an optically active region of the optical waveguide in which light is generated in a predetermined optical field having a nonuniform intensity which varies as a function of position within the active region;

an optically passive portion of the optical waveguide formed by quantum well intermixing; and

means for providing gain profiling coupled to the optically active region for injecting carriers into the optically active region, said means injecting carriers into the optically active region in a nonuniform spatial distribution.

32. (Original) The semiconductor laser device of Claim 31, wherein said means for injecting injects carriers into the optically active region in a distribution which approximates a distribution of said optical field.

33. (Currently Amended) The semiconductor laser device of Claim 31, wherein the ~~optical waveguide further includes at least one~~ optically passive region is formed adjacent the optically active region, the optically passive region having an increased bandgap ~~of the optically passive region formed by quantum well intermixing~~.

34. (Currently Amended) A semiconductor laser device, comprising:

an optical waveguide;

an optically active region of the optical waveguide in which light is generated in a predetermined optical field having a nonuniform intensity which varies as a function of position within the active region, at least one first subregion of the active region having generated therein a first light intensity, at least a second subregion of the active region having generated therein a second light intensity less than the first light intensity;

an optically passive region of the optical waveguide formed by quantum well intermixing; and

means for providing gain profiling, said means including a shaped carrier injection contact formed to be coupled to the active region and having a surface contact area, more of the surface contact area of the contact being formed adjacent the first subregion of the active region and less of the surface contact area of the contact being formed adjacent the second subregion of the active region.

35. (Currently Amended) The semiconductor laser device of Claim 34, wherein the ~~optical waveguide further includes at least one~~ optically passive region is formed adjacent the optically active region, the optically passive region having an increased bandgap ~~of the optically passive region formed by quantum well intermixing~~.

36. (Currently Amended) A semiconductor laser device, comprising:

an optical waveguide;

an optically active region of the optical waveguide in which light is generated in an optical field;

an optically passive region of the optical waveguide formed by quantum well intermixing; and

means for providing gain profiling coupled to the active region for injecting carriers into the active region, said means selectively amplifying a fundamental mode of said optical field.

37. (Original) The semiconductor laser device of Claim 36, wherein said means comprises a contact coupled to the optically active region and shaped for generating a spatial distribution of injected carriers sufficiently matched to the distribution of said fundamental mode that the fundamental mode is selectively amplified in preference to higher order modes of the optical field.

38. (Original) The semiconductor laser device of Claim 36, wherein the device further includes a spatial mode filter formed adjacent the optically active region, the spatial mode filter preferentially selecting for single spatial mode operation.

39. (Original) The semiconductor laser device of Claim 38, wherein the spatial mode filter is an optically passive region of the waveguide.

40. (Currently Amended) A semiconductor laser device, comprising:

a wide optical waveguide formed around an axis of symmetry;

an optically active region of the waveguide generating an optical field in a fundamental mode having a maximum on said axis and a Gaussian optical field distribution;

an optically passive region of the waveguide formed by quantum well intermixing; and

means for providing gain profiling including a shaped carrier injection contact having a surface contact area coupled to the optically active region, a geometric distribution of said surface contact area being concentrated near said axis and approximating said optical field distribution.